UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

AUG 1 1 2011

EXHIBIT
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Mr. Paul E. Davis
Director, Division of Water Pollution Control
Tennessee Department of Environment
and Conservation
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Davis:

On May 19, 2011, the Environmental Protection Agency received for renewal the draft National Pollutant Discharge Elimination System (NPDES) permit for the Tennessee Valley Authority (TVA) Gallatin Fossil Plant, NPDES permit number TN0005428, which expired on November 29, 2009, and is being administratively continued. In a letter to you dated June 14, 2011, we requested up to 90 days to review the proposed permit in accordance with Section IV.B.6.c. of the Tennessee/EPA Memorandum of Agreement. We have completed our review and offer the following comments:

1. Technology-Based Limits for the Ash Pond

The NPDES permit must include numeric technology-based effluent limits (TBELs) for the ash pond (outfall 001) as required by the Clean Water Act (CWA) and implementing regulations. The CWA Section 301(a)(1) requires that permits include limitations based on the application of statutorily prescribed levels of treatment ("technology-based effluent limitations"). Where the EPA has not promulgated technology-based effluent guidelines for a particular class or category of industrial discharger, or where the technology-based effluent guidelines do not address all waste streams or pollutants discharged by the industrial discharger, the permitting authority must establish TBELs on a case-by-case basis in individual NPDES permits, based on its best professional judgment or "BPJ."

In October 2009, the EPA completed a study of wastewater discharges from both Flue Gas Desulfurization (FGD) and Coal Combustion Residuals (CCR) impoundments (i.e., ash ponds). Findings indicate the need for revised effluent guidelines (EGL) for these wastestreams to due to the potential for metals to exist in relatively high concentrations. The Agency plans to promulgate a revised EGL in 2013. In order to address these discharges during the interim period, on June 7, 2010, the EPA issued guidance entitled "*National Pollutant Discharge Elimination System (NPDES) Permitting of Wastewater Discharges from Flue Gas Desulfurization (FGD) and Coal Combustion Residuals (CCR) Impoundments at Steam Electric Power Plants.*" The record for the 1982 ELG indicates that Best Available Technology (BAT) was not established for fly ash or bottom ash transporter water in the final

1982 rule. These wastewaters discharge from CCR impoundments. Thus, BAT-based limits would currently need to be established through BPJ for discharges from CCR impoundments.

Based on our review of the fact sheet, it does not appear that the Tennessee Department of Environment and Conservation (TDEC) examined pollutants expected to be present in the discharge from the CCR impoundment (i.e., ash pond) to establish appropriate TBELs as required by CWA § 301(a)(1) and applicable federal regulations at 40 Code of Federal Regulations (CFR) § 125.3 (applicable to state NPDES permit programs per 40 CFR § 125.25). Therefore, TDEC should reconsider the guidance and the obligations under CWA § 301 in this permit reissuance by evaluating the costs for TVA to install, at a minimum, chemical precipitation or biological treatment for the ash pond discharge in order to reduce the effluent discharge of metals. If the revised analysis still concludes that the existing pond is BAT, TDEC could establish TBELs that reflect the performance of the pond using reported effluent characteristic data for metals contained in the facility's Discharge Monitoring Reports and/or recent permit application.

2. Section 316(a) Report and the Study Plan for the Subsequent Permit

The draft permit lacks detail and does not generate information sufficient to support a CWA Section 316(a) variance determination for the next permit cycle. The EPA's comments are submitted in order to ensure that the study plan to be developed during the next permit cycle will generate information sufficient to support a determination of whether the TVA Gallatin Plant's thermal variance under Section 316(a) of the CWA can be approved.

The EPA recognizes that, under 40 CFR § 125.73(c), existing sources seeking variance renewal are not typically required to conduct the same detailed, comprehensive studies required under § 125.72(a) and (b). Also, under § 125.73, existing sources can base their demonstration on a lack of appreciable harm instead of completing predictive studies. However, under § 125.72(c), the type of detailed studies contemplated under § 125.72(a) and (b) can be required whenever determined to be necessary. After examining the record of prior 316(a) variance determinations for the TVA Gallatin Plant, the EPA has concerns regarding the need for a more thorough examination and definition of the Balanced and Indigenous Population (BIP), the identification of Representative Important Species (RISs), and a closer examination of whether the variance is protective. Given the thinness of the available record to justify prior variance determinations, the EPA believes a more focused study is needed. The EPA acknowledges that TVA has in the past collected a substantial amount of data in support of its variance. TVA may use existing data in completing its study and may incorporate the existence of such data into the study plan design; however, the existing data needs to be evaluated and presented in the context of a BIP definition that the existing record does not adequately provide.

Section 316(a) of the CWA contains the term "BIP" but does not define it. However, 40 CFR § 125.71(c) defines the term "balanced, indigenous community"[1] as:

> "A biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination

[1] "Balanced, indigenous community" and BIP are equivalent terms.

by pollution tolerant species. Such a community may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a community will not include species whose presence is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act: and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a)."

The Environmental Appeals Board stated in its decision in In Re Dominion Energy Brayton Point, LLC, 12 Environmental Appeals Decision (E.A.D.) 490 (2006)("Brayton Point"), "this definition clearly envisions a consideration of more than the population of organisms currently inhabiting the water body. In this vein, although it permits inclusion of certain 'historically non-native species' that are currently present, it explicitly excludes certain currently present species whose presence or abundance is attributable to avoidable pollution or previously-granted section 316(a) variances."

Page 557 of the Brayton Point E.A.D. goes on to further state that a BIP "can be the indigenous population that existed prior to the impacts of pollutants, not solely the current populations of organisms."

To the question of how a permittee should identify a BIP in an area that has been altered by impacts from an existing thermal discharge, the Brayton Point E.A.D. points out that it may be appropriate to use a nearby water body unaffected by the existing thermal discharge as a reference area. Examination of an appropriate reference area may be applicable in this case.

The definition of "balanced, indigenous community" at 40 CFR § 125.71(c) contains several key elements. To be consistent with the regulations, each of these key elements should be specifically addressed in the demonstration, and the Study Plan should be designed to generate information relevant to these elements. Those elements include: (1) "a population typically characterized by diversity at all trophic levels;" (2) "the capacity to sustain itself through cyclic seasonal changes;" (3) "presence of necessary food chain species;" (4) "non-domination of pollution-tolerant species;" and (5) "indigenous." Each of these elements is discussed in more detail below:

a. "A population typically characterized by diversity at all trophic levels" means that all of the major trophic levels present in the unaffected portion of the water body should be present in the heat-affected portions. The EPA recognizes that community structure differences will occur, however, the number of species represented in each trophic level in the unaffected portions should be reasonably similar in the heat-affected portions of the water body. Sampling and analysis of fish and invertebrate communities should be done such that the major trophic levels are identified and represented by reasonably similar species distributions. Also, the study plan should be expanded to include some observations of wildlife (i.e., water fowl, mammals, amphibians, etc.) both upstream and immediately downstream of the discharge point that may be impacted by the thermal discharge.

In keeping with the requirements of CWA Section 316, the plant needs to address the BIP's of the phyletic groups (amphibians, reptiles, birds, mammals) in the "wildlife" category. This group should be restricted to animals that are dependent on the receiving waters. For example, the blackbird population needs to be included but waterfowl or Kingfishers might be. Mammals that only drink from the receiving waters (i.e., whitetail deer) don't need to be included, but the beaver population might be. Once those BIPs are identified, the permittee should come up with a list of the wildlife species from all phyletic groups that may be affected by the temp changes in the receiving waters. The effects could be either direct or indirect depending on their dependence on the receiving water for habitat, food, etc. There may be several species of turtles present but some may be highly vulnerable and others not as much. The U.S. Fish and Wildlife Service and state wildlife agency can supply most, or all, of the information. Specifically, the plant should describe what effects the temperature changes might have on organisms that have habitats located near the point of discharge and depend on the receiving water body for survival. For example, amphibians can be affected directly in terms of survival and development of eggs and early life stages that are water dependent. Later, juvenile stages and adults could be affected by changes in prey items (food distribution) in the thermal affected area. All stages could be affected by increases in predation if warmer areas attract more predators. So for species for each group, the permittee needs to discuss the effects the thermal variance might have in regards to maintain a BIP of these organisms.

b. "The capacity to sustain itself through cyclic seasonal changes" means that any additional thermal stress will not cause significant community instability during times of natural extremes in environmental conditions. Community data should be collected during normal seasonal extremes as well as during optimal seasonal conditions. Data should be compared between heat affected and unaffected portions of the receiving water body to account for normal community changes corresponding with a change in season.

c. "Presence of necessary food chain species" means that the necessary food webs remain intact so that communities will be sustaining. We believe that exhaustive food web studies are not necessary provided that invertebrate, fish and wildlife communities are otherwise healthy, i.e., represented by sufficiently high species diversity and abundance (appropriate for that portion of the receiving water body) for the identified trophic levels and sustaining through normal seasonal changes.

d. "Non-domination of pollution-tolerant species" means that in the case of a thermal effluent, community assemblages in heat affected portions of the water body dominated by heat-tolerant species do not constitute a BIP. The EPA recognizes that because all species have varying levels of thermal tolerance, communities in the heat affected portions of the receiving water body may possess altered assemblages in terms of species present and abundance. All community data should be collected, analyzed and presented to clearly demonstrate that affected communities have not shifted to primarily heat tolerant assemblages.

e. "Indigenous" has been further clarified in the regulations: "Such a community may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a community will not include species whose presence is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a)." The EPA recognizes that non-indigenous species are present in most aquatic systems in the United States. All community data should be analyzed and presented to demonstrate that community assemblages in the heat-affected portions of the receiving water body are not significantly different from non-affected communities with regard to the number of non-indigenous species in the assemblages.

In addition to the foregoing components of the BIP definition, the Study Plan should also include provisions for the identification of RIS (e.g., a list of threatened, endangered, thermally sensitive, or commercially or recreationally valuable species up- and downstream of the study area), as contemplated in 40 CFR § 125.72(b). 40 CFR § 125.71(b) defines RIS as "species which are representative, in terms of their biological needs, of a balanced, indigenous community of shellfish, fish and wildlife in the body of water into which a discharge of heat is made."

The following EPA comments should be specifically addressed in the study plan prior to TVA commencing sampling. The plan should:

i) include available information on wildlife in the receiving water body areas based on communications with the state's wildlife agency. See item a) above.

ii) include a diagram depicting the thermal plume under the worst case scenario and address the presence or absence of a zone of passage for which fish can travel around the thermal plume.

iii) provide information of which fish collected are either heat-sensitive or nuisance species. See item d) above.

iv) provide a list of any receiving water body species that are endangered or threaten in accordance with federal and state regulations.

v) select more appropriate sampling locations in order to avoid data that is difficult to interpret.

vi) analyze and present data to clearly demonstrate that affected communities have not shifted to primarily heat tolerant assemblages.

vii) analyze and present all data to demonstrate that community assemblages in the heat-affected portions of the receiving water body are not significantly different from non-affected communities with regard to the number of non-indigenous species in the assemblages.

viii) include recent data or information on benthic macroinvertebrates. See item a) above.

To reiterate, in order to ensure that TVA's future Study Plan is adequate to demonstrate that the Gallatin Plant should get continuance of a Section 316(a) variance during the term of its next NPDES permit, the EPA requests the opportunity to review a draft 316(a) plan prior to TVA commencing the study. Note that the above study elements are required for all facilities subject to a thermal variance. If you have any questions, please contact Ms. Karrie-Jo Shell of my staff at (404) 562-9308.

Sincerely,

Christopher B. Thomas, Chief
Pollution Control and Implementation Branch
Water Protection Division

cc: Ms. Linden P. Johnson
Manager, Water Permitting and Compliance
TVA - Environmental Affairs